

APHEIS

Air Pollution and Health : A European Information System

Answering Key Questions on Air Pollution and Public Health in Europe



Introducing

APHEIS

Air Pollution and
Health: a European
Information System

Answering Key Questions on Air Pollution
and Public Health in Europe



By Sylvia Medina, Antoni Plasència
and contributing members of the APHEIS group

DG SANCO G/2
“Pollution-related diseases” programme





INTRODUCING APHEIS

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Air Pollution Continues to Threaten Public Health in Europe

A study (Künzli et al., 2000) published recently in *The Lancet* revealed that roughly between 19,000 and 44,000 people die every year from the effects of air pollution in three European countries alone, costing them some €50 billion annually (Sommer et al., 2000).

Air pollution also increases the occurrences of asthma attacks, bronchitis, heart attacks and other chronic pulmonary and cardiovascular diseases and it impairs the development of children's pulmonary capacity.

And air pollution continues to threaten public health in Europe despite tighter emission standards, closer monitoring of air-pollution levels and decreasing levels of certain types of air pollution.

Given this situation, the APHEIS programme has been designed to provide decision makers, environmental-health professionals and, indeed, all European citizens with a comprehensive, up-to-date and easy-to-use information resource on air pollution and its impact on public health. This will help them make more-informed decisions about the political, professional and personal issues they face in this area.

What Key Users Need to Know About Air Pollution and Its Impact on Public Health

European decision makers who set policy on air pollution need accurate data that has been analysed to meet their needs. The data needs to be valid, geographically representative for European nations, and up-to-date. And analysis of that data needs to be actionable and standardised, and use the latest methodology.

European environmental-health professionals need information on air pollution and health in Europe in order to test new hypotheses.

And Europeans in general need easy access to clear, understandable information on the impact of air pollution on their health so they can make decisions about their daily lives.

Unfortunately, until now the types of information these three groups of users require have not always been available.

How These Information Needs Have Been Met Until Now

Before the APHEA research programme began in 1993, European decision makers and environmental-health professionals relied mainly on American research for their information, because only a small amount of European data was available. And they relied on individual studies that did not use common methodology. As a result, they could not compare research findings and draw synthetic conclusions.

The APHEA programme (Short-term Effects of Air Pollution and Health: A European Approach) solved these problems by providing new, reliable European research data on the effects of air pollution on public health; and by instituting a standardised, common methodology across different countries (Katsouyanni *et al.*, 1996).

However, being a research programme limited in time, APHEA was not designed to provide information on an ongoing basis for decision makers and environmental-health professionals. Nor was it designed to satisfy the information needs of the general public.

How APHEIS Came Into Being

To meet the information needs of decision makers, environmental-health professionals and the general public, France's National Institute of Public Health (InVS) worked with Barcelona's Municipal Institute of Public Health (IMSP), the WHO European Centre for Environment and Health and other organisations to develop the APHEIS programme.

APHEIS (Air Pollution and Health: A European Information System) is cofunded by the Pollution Related Diseases Programme of DG SANCO of the European Commission (contract No. SI2.131174 [99CVF2-604]) and by participating institutions (see box at end listing APHEIS partners).

The APHEIS programme is an epidemiological-surveillance system (Teutsch et al., 1994) that aims to provide information on a routine basis on the effects of air pollution on public health tailored to the needs of the three audiences it serves.

In particular, APHEIS will continue to analyse short-term effects of air-pollution on health in Europe and update the findings in the coming years.

APHEIS in fact builds on previous, extensive experience acquired in France creating information systems on air pollution and public health.

In particular, in 1991 public-health professionals began investigating the value of creating an epidemiological-surveillance system in France. The resulting ERPURS programme (Medina et al., 1997) has been monitoring the effects of air pollution on public health in the Paris metropolitan area since 1994.

In 1997, the subsequent nine-cities PSAS-9 programme (Quénel et al., 1999) met the requirements of new French legislation that called for monitoring air pollution and its effects on health.

How APHEIS Will Provide the Information Its Three Groups Require

To meet the needs of decision makers, environmental-health professionals and the general public, the APHEIS programme aims to:

- Create a Europe-wide epidemiological-surveillance system on air pollution and public health
- Quantify the effects of air pollution on public health over time at the local, national and European levels
- Assess the importance of factors that can change exposure-response relationships
- Deliver standardised, periodic reports on the impact of air pollution on public health.

Other Key Functions APHEIS Will Perform

In addition, the APHEIS programme will:

- Create an active public-health and environmental information network that facilitates the flow of information between environmental and healthprofessionals, and develop expertise across Europe
- Guide and optimise the measurement of air pollutants by local air-quality-monitoring networks so these networks meet the needs of public-health monitoring
- Contribute to the training of environmental-health professionals

- Provide information to evaluate the effectiveness of different scenarios for reducing air-pollution levels on local, national and European levels
- Allow researchers both to test new hypotheses on the impact on health of various types of air pollution and to generate hypotheses on the aetiology of the effects of pollution on health.

What APHEIS Has Done So Far

During its first year (1999-2000), the APHEIS programme sought to:

- Define the best indicators for epidemiological surveillance of the effects of air pollution on public health in Europe
- Identify those institutions best able to implement the epidemiological-surveillance system in the participating centres in 12 countries.

To meet the first objective, APHEIS created five advisory groups in the fields of public health, health-impact assessment, epidemiology, exposure assessment, and statistics. These groups drafted guidelines for implementing the surveillance system and developing a standardised protocol for data collection and analysis.

To meet the second objective, APHEIS created and circulated a questionnaire to determine interest in the surveillance system in each country and to understand how the different institutions could work together on the local, national and European levels.

Among others, answers to this questionnaire revealed:

- That the individual APHEIS centres can work with local, regional and national networks on questions concerning air quality, meteorological, health and socio-demographic data
- The existence of working relationships between air-quality and public-health agencies, especially at the local and regional levels
- The existence of grass-roots organisations interested in environmental-health issues
- The potential users of information provided by the APHEIS programme.

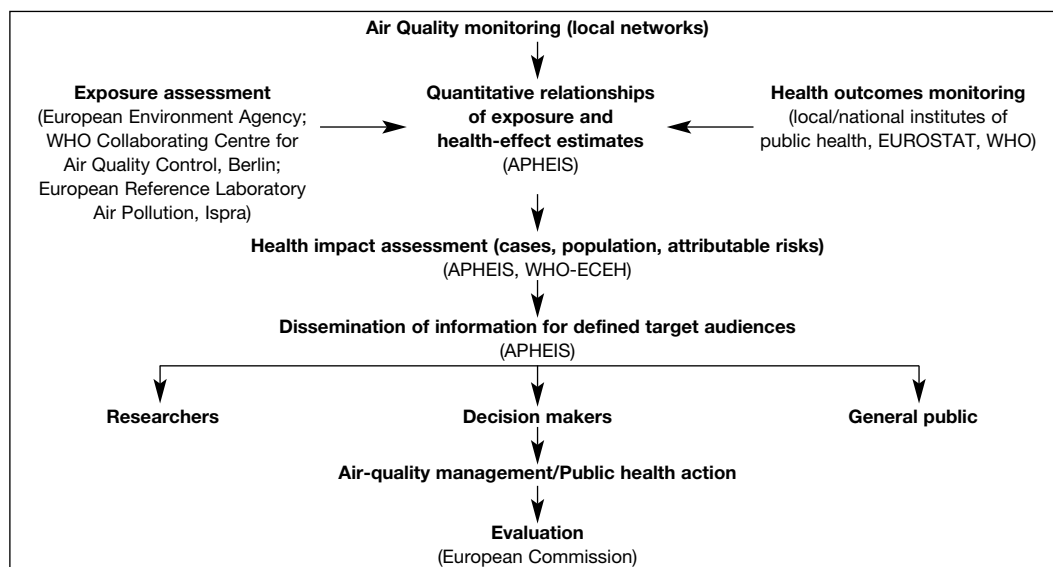
Based on the results of this questionnaire, APHEIS sent out a second questionnaire to assess each centre's ability to implement, during the second year of the APHEIS programme, the guidelines drafted by the advisory groups.

Results of the second questionnaire showed that:

- Most APHEIS centres are public-health institutions
- Few centres collect the needed data, but most have access to it
- The core set of health and air-quality data is available in most centres
- Lead times in obtaining data on health indicators are long and must be taken into account.

It was thus determined that most centres can comply with the APHEIS guidelines; that all centres can deliver standardised APHEIS reports; and that some centres can provide periodic, advanced reports on specific issues.

How will APHEIS work?



What APHEIS Will Do Going Forward

During its second year (2001), the APHEIS programme is testing implementation and functioning of the epidemiological-surveillance system in 26 cities in 12 European countries (see map).

This work includes:

- Implementing as is, or adapted to each centre's need, the organisational models proposed during the first year of work, including, if needed, setting up technical and institutional committees at each centre; and defining their specific tasks and how they will work together
- Collecting and processing data on exposure to air pollution, on climate, on health status of the population, and on geographical areas using the data collected by the local networks and public-health institutes and, when possible, by the European data bases (EUROSTAT and AIRBASE)
- Analysing the data using the APHEIS guidelines. Periodical analysis will allow estimating and updating temporal and spatial variations in risk estimates in Europe
- Preparing and disseminating findings for the specific audiences and recommendations for replicating the APHEIS surveillance system by other centres
- In addition, the APHEIS programme will start exploring collaboration with the EUROHEIS programme (another programme of EC/DG SANCO) in the UK on mapping and health-impact assessment.

How Can APHEIS Continue in the Future?

If it is to be truly effective in meeting the information needs of European decision makers, environmental-health professionals and European citizens in general, the APHEIS programme must function on a continuing, long-term basis.

For this purpose, the programme requires the ongoing commitment and financial support of the European Commission and its member states.

APHEIS Cities



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To make better-informed decisions about the political, professional and personal issues they face concerning the impact of air pollution on public health, European decision makers, environmental-health professionals and the general public need a comprehensive, up-to-date and easy-to-use source of information in this area.

Decision makers, in particular, need information to guide the management of air quality and of public-health programmes on local, national and European levels.

To meet these many information needs, the APHEIS programme is creating an epidemiological surveillance system that will generate information on an ongoing basis for a health-impact assessment (HIA) of air pollution in Europe, and will deliver its findings to its audiences in multiple ways.

This brochure describes in succession why air pollution continues to be a major concern for public health in Europe; what information key groups need; how APHEIS will meet these needs; what other functions APHEIS will perform; and what APHEIS has done so far and will do in the future to meet its objectives



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